TECHNICAL TIPS FROM THE PAGES OF THE NORTHERN VIRGINIA **Regional Group** 96

"VALVE CLATTER"

Editor : Cliff Green

You're in good hands at your Ford Dealer's!

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FORWARD

Welcome – this booklet is a compilation of technician tips written by members of the Northern Virginia Regional Group as published in their monthly newsletter "VALVE CLATTER". Articles are submitted through out the year unsolicited by the editor Cliff Green.

It is the knowledge of the V8 Ford and its peculiarities that is inherent within our membership and that they are willing to share with others in our newsletter. This list has been compiled from past issues of 2001-2007 for the interest of those attending the Eastern National Meet at Fairfax, VA., May 31 – June 4, 2007

Information contained within has worked for our members and the information is considered reliable. The articles may be reprinted as long as the "VALVE CLATTER" and the authors are acknowledged.

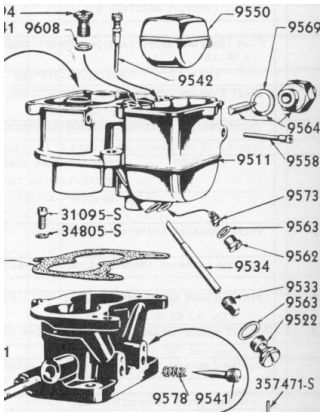
It is part of our hobby to "prevent reinventing the wheel" and it is hoped that this booklet will be of help. Copies of this booklet may be obtained on CD by contacting the editor : cliffgreen@cox.net

Our thanks to Battlefield Ford of Manassas, VA, for sponsoring this booklet.

STROMBERG EMULSION TUBES

Allan Ponton

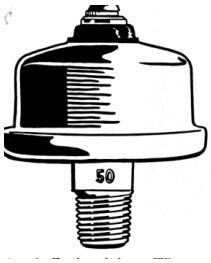
On model 48, 97 and 81 Stromberg's - these carbs have the emulsion tubes press fitted in the body of the carb. When most people rebuild these cabs. they don't remove the tubes How ever they need to be removed and cleaned and check for damage that is caused by over tightening the main jets. Once you remove the main jets you will see the emulsion tubes. Use a 6-32 tap and tap the tube turning the tap handle 10 half turns. This will install threads in the tube. Use a 6-32 x1 and a half inch machine bolt. Install a 6-32 nut and a number 10 flat washer on the bolt. What you are doing is making a mini puller. Screw the bolt in to the threads you tap into the tube until it stops. Screw the nut down on the bolt with the flat washer until it touch's the carb. Use a 5/16 nut driver and tighten the nut. This will remove the emulsion tube. It takes very little pressure to do this. Once they are out you can clean them and also clean the carb. better. To install remove the nut and flat washer from the bolt. Screw the bolt into the tube. Line up the flats of the tube with the 45 degree angle down. Tap the head of the bolt with a screwdriver handle, gently. It does not take much. Remove the screw and repeat for the other tube. Now you have the piece of mind the emulsion tubes were not over looked when you did your carb.



USING RIGHT OIL PRESSURE GAUGE?

Information taken an article by Dave Cole in" The Way of the Zephyr" – Jan-Feb 1994.

Ford did not have oil pressure gauges until 1935. That year, Ford introduced an electric gauge, with a circuit that went from the battery through the ignition switch to the gauge in the instrument panel, and another wire from that to the sending unit that was screwed into a hole in the engine block, and thence to ground. The sending unit, 48-9278 and the instrument gauge were calibrated to work together as a pair, and could register a maximum pressure of 50 pounds per square inch.



Then during WWII, Ford redesigned the V8, including the lubrication system and since the new oil pump could generate greater flow and thus higher pressure, the gauge units were recalibrated to register a maximum of 80 pounds. Owing to wartime restriction, Ford could use these engines only in trucks they were allow to manufacture at first, but after the war all

Fords used the 80 lb. oil pressure gauge system. This unit was 41A-9278 and cost $1.25, $.50 cheaper that the earlier one.

Time passed, and eventually the earlier 48- sending unit became obsolete, so the only type readily available was the 41. A NOS 48- unit today are rare and might cost $75.

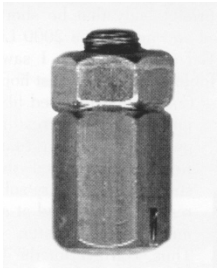
The two sending units (at least original ones) look virtually identical except the 48- is stamped "50" on the square part of the pipe fitting and the 41A is stamped "80". If you use the wrong sending unit it will register only 5/8 of what it should. At 50 lbs pressure, it reads about 30 – 35.

So, if your oil pressure reads low, especially at idle , check to see it you have the right sending unit for the oil pump.

STARTER STUD REPAIR

The Way of the Zephyr is edited by Dave Cole – yup, the same guy that writes all the great articles for the *V8 TIMES*. I am a member of their club just to receive this great publication. Their tech tips relate to the V8 also. Here is a condensation of one written by Mike Calistrat:

"Starter Terminal Repair Stud"



Over time the threads of the brass terminal on the starter motor become worn out.. You put a washer under the cable so that the net can grip fresh threads, but over time you can no longer tighten down the net anymore. What to do?

Mike was able to find: "Thexton's Repair Kit #530, a starter terminal repair stud in the proper 5/16"-24 S.A.E. size, which could be screwed on over the worn original terminal, recutting the stripped threads and providing a new brass stud for the starter cable connection. Don't expect to find this kit in stores; you have to persuade the parts store manager to order it – for a mere $2.50!"

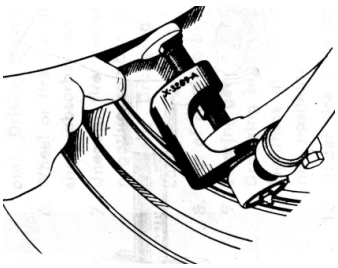
"The terminal is not removable from the starter, as inside the starter housing, it is silver-soldered to the starter wire. On the outside of the starter, the terminal is secured by a nut, under which is a washer. Remove the nut and uncover good threads. Measure the length of the terminal and if it is longer than 5/8", saw off the excess to accommodate the repair stud. Make sure the washer is in place. Thread the repair stud on. It is brass and is harder than the original copper, and nearly as good a conductor."

DRAG LINK REMOVAL

Clem Clelment

I found that I needed to readjust my drag link on my '39 pickup. I had installed an NOS one without adjusting it and the steering wheel was cocked a bit to the left. It was explained to me that that means the gears are not riding on the center of their travel.

So I get my fork out and a Beeeeg Hammer and remove the tie rod nut and begin to use the fork, and a strong voice comes in both ears. "Rich, what did I teach thee back in the 1956 about removing tie rod ends?" My Uncle, R. Raeman Borden, passed low these 48 years ago this month, had carefully taught me how to remove the tapered tie rod end. His voice was as clear now as then: remove the nut, then turn the wheel so you can get a good shot at the arm with the tapered hole in it. He had a wonderful 3 # hammer on a 6 inch handle that he loved. It was just for this purpose, to get wrist-power in a confined space. I have such a hammer and ran for it. By whacking the tapered hole on the spindle as it sits, so the shock of the hit is absorbed by the spindle pin, the tie rod end drops out very easily. The hole ovals just a bit and out comes the tie rod end. I sure cried thanks to Uncle Raeman and to the POWER.



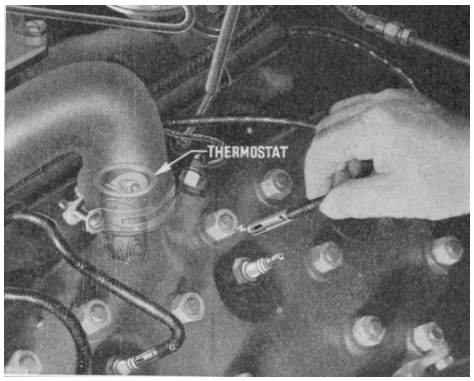
An alternate method would be to use the correct tool – KRW – 3289-A, as pictured below. Now go find one at Hershey. Ed.

TESTING SPARK

John Girman

Have you ever wondered why they say to test for spark by holding the spark plug wire 3/16 in. (or 0.1875 in) from the head or some other metallic part of the engine? After all, a typical spark plug gap is only 0.025 to 0.030 in. Why use a gap for testing that is 6 or more times larger?

Here's why. As we all know, air is an electrical insulator and the more air, the greater its insulation properties. When the spark plug is fired outside the engine, it only has to overcome the insulation between the spark plug electrodes of a normal atmosphere with a density of about 15 psi. However, the air/fuel charge inside an engine near the top of the compression stroke is more like 100 psi, with the exact value depending upon the compression of the engine. That means the air/fuel charge within the engine and between the spark plug electrodes has an insulation value roughly 7 times that of the air outside of the engine (100 divided by 15 equals approximately 7). To mimic the conditions with the spark plug inside the engine when the spark plug is outside the engine, we have to increase the gap from the spark plug wire to the engine head by a factor of 7 to realistically test the engine spark. If the coil is weak or the condenser is defective, you could get a spark outside the engine that looks good when the spark plug wire gap is 1/8 in but it will not have enough voltage to fire a spark plug inside the engine.



NAPA CONDENSORS & LED LIGHTS

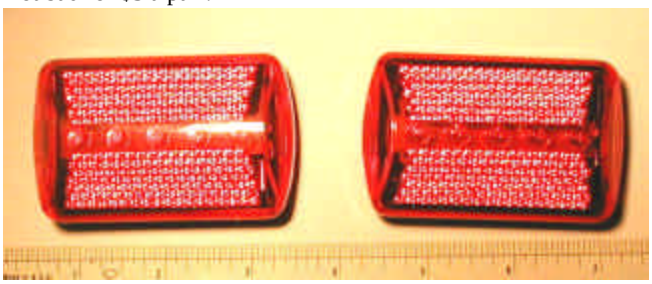
Editor

Not to worry about that condenser that you have on the shelf or in you tool box that you picked up at Hershey years ago – throw it away and go down to your local NAPA store and order one of these:

1928- 36 FA 5
1937 – 41 FA 49
1942 – 48 FAS 54

The FA 49 has the same bracket that the original one does and it only cost $6.50. Buy a couple while you're at it. As long as I have been messing with the '40, I never knew this!
I am sure that they have your 1949 – 53 in stock, also.

At a train show in York, Pa (their "Hershey " event), I bought a pair of blinking, battery powered, red LED lights that I am going to Velcro to my rear window when I drive my woodie at night. They measure 3 x 1 ¾ and put out a lot of light. People use them on bikes and attach them to their jogging shorts, or what ever. Not bad for $5 a pair!



VALVE REPLACEMENT

Jason Javaras

Sometime last year I finally threw in the towel with what appeared to be a cracked block in my '40 coupe. I had gone through several sets of freshly milled heads and new head gaskets, and was no closer to finding a sign of a crack that would explain the presence of water in the crankcase. Although the engine had overheated several times in years past it had not done so in well over a year so I couldn't pin point a single incident that would seem to be at blame for the current problem. In fact, the car had been running very well for over a year before water started to mysteriously appear in the oil. And so out after a year or so of frustration, and many sets of expensive gaskets I decided to look for another engine for the '40.

I found out that flathead engines are becoming harder and thusly more expensive to come by. The real reason for the escalating price of these engines is that good core blocks are getting scarce. They are still available from some vendors who specialize in EFV8 parts but the price is easily twice what our Chevrolet friends have to pay for a rebuilt bowtie small block engine. When another club member offered me a rebuilt '40 engine within my budget that had been sitting on a skid in his garage for over ten years I decided to take a chance.

The engine came with a build sheet and turned out to be in amazingly good shape after it's long storage. After it's installation it started right up and ran perfect – up to a point. It would run smoothly for some period of time (sometimes 5 minutes, sometimes an hour) and then start lopping irregularly and finally quit and then it didn't want to start up again until it cooled for an hour or so, even though the temperature never ran past normal. I was able to solve the restart problem by replacing what I thought was a good coil with a freshly rebuilt coil from Skip Haney in Florida.

Not to string out the suspense but the problem was first pinned down to two valves that were sticking after the engine warmed up. A compression check showed that two valves on opposite banks were sticking open at pretty much the same time. I could push them down easily with a pencil through the spark plug holes. I tried every lubricant that was suggested by fellow V8 club members and then some but all lasted only a short time. I

removed the intake manifold several times and could see the valves that were sticking very well, but since the engine was just rebuilt they didn't appear to be sticking hard enough to cause the problem I was seeing. I continued letting the car run several times a week for several months and the problem "seemed" to be going away. However whenever I tried to take it for a spin it floundered and quit – once just out of the driveway, and the next time within 10 miles.

And now the crux of this story. Before the help arrived I had once again taken the intake manifold off the block, drained the radiator and cleaned up the surfaces of the block and heads so the experts could have as sterile an operating room as possible. I had also ordered a pair of new valves, springs, guides, and retainers from Joblot. Since putting out the call for help one of the sticking valves had finally settled down, leaving only the #1 exhaust valve as the real problem.

There are a couple of special tools that are needed to remove flathead valves. One is a bar type valve lifter that compresses the valve spring in order to remove the valve guide retainer that holds the valve in place. Another is a valve spring compresser to reassemble the valve, guide, spring and retainer. When the retainer is removed, the whole valve assembly (valve, spring, and valve guide) can be removed intact. This was made easier in this case because the engine was new. If the engine had a lot wear and had been sitting for a while valve removal can be a real problem and require other specialty tools for that purpose. We were able to extract the suspect exhaust valve and found that sure enough it had a rough spot on the valve stem that apparently was enough to hang it up in the valve guide. Oddly enough, the new valve that I had purchased as a replacement, fresh from it's cosmolene cover, was almost as defective as the one we had removed. A spare NOS valve was found and it was installed it without further incident. The engine was assembled the next day with yet another set of new gaskets and the car ran perfectly for it's maiden voyage –

NUTS AND BOLTS

Dave Gunnarson

Ever been frustrated at Home Depot or Lowes when searching for some hardware for your Early Ford V8 and lamenting the Unfortunately times have changed and we are stuck with the big box stores with their lack of knowledgeable sales staff, disorganization and meager variety of inventory.

While it may be possible to get some items from a good source like Ray Nacewicz (www.fordbolts.com), I have used McMaster-Carr as a less expensive alternative on several occasions. McMaster-Carr is a large hardware and equipment supplier with tens of thousands of currently available parts from hardware to shelving, tools and much more. They have an on-line catalogue (www.mcmaster.com) that can be searched for that special fine-thread machine screw or special thin washer and can be fun just to search through – you may be amazed at the variety of goods. I had success in locating the tiny (3/64") cotter pins used in the early distributors, 3/8" diameter round-head steel frame rivets and some other parts I could find nowhere else. Some items come in larger quantities (box of 100) and there is a nominal shipping charge but the prices seem to be reasonable. A box of 100 frame rivets cost a total of less than six dollars including shipping and was on my doorstep in less than 48 hours of my phone order.

CHECKING YOUR COOLANT

John Girman

Now that the weather is getting colder, we need to do one of two things with our early Ford V8's to prevent damage from freezing coolant: drain the coolant from the engine or make sure we have sufficient freeze protection in the coolant. Most of us are familiar with how to check the coolant for freezing protection. You just need to use a hydrometer, either the inexpensive type with the little floating balls or the more sophisticated type with graduated markings on a float. About the only caution to be observed is to make sure you are using the correct hydrometer, i.e., one for ethylene glycol coolant or for propylene glycol coolant, depending on the type of coolant you have in your early Ford V8. You also need test the coolant under the conditions correct for the type of hydrometer you are using, either hot or cold.

However, there is another test for coolant that is equally important: checking to make sure your coolant still has sufficient corrosion protection. While this is important for all early Ford V8's, this is especially important if your engine has an aluminum head. The corrosion protection that is in all new coolants can be depleted with time and electrolysis can result. Basically, electrolysis can occur whenever two dissimilar metals are in contact with each other and with an acidic solution. This forms a simple electrical cell and the resulting electricity can cause corrosion. Thus, if the coolant is allowed to become acidic, the internal parts of the engine (and even the radiator) will corrode.

Fortunately, there is a simple test you can do to check for corrosion protection. You could use pH strips to check the acidity of your coolant but most of us don't have a handy supply of these. Instead, you can use a tool that most of us have at hand, our volt-ohm meter (VOM).

All you have to do is set your VOM to a DC voltage range that can measure in tenths of a volt. Remove the radiator cap and place the metal probe of the negative VOM lead into the coolant, being careful that it does not touch any other part of the radiator. Place the positive lead of the VOM against a bare metal part of the radiator (or a good ground on the engine). If you get a reading of 0.2 volts or less, your coolant is in good shape. If you get a reading of 0.5 volts, your coolant is borderline and you should consider replacing it. If you get a reading of 0.7 volts, replace your coolant immediately.

That's all there is to it. Now is the time to check your coolant. (And by the way, this also works for modern cars and corrosion protection is even more important for them because of all the dissimilar metals in a modern engine.

MODERN GEAR OILS AND OLD TRANSMISSIONS

Editor & John Girman

We followed an interesting discussion on Fordbarn's web site recently about gear lube. Someone asked what lube should be use in his transmission and rear end.

Research in our literature found that different year cars required slightly changed viscosity requirements as shown in the table below:

Transmission and Differential Oil Requirements by Year

Year	Transmission	Differential
1932 -36	SAE 160 summer	Mild EP 140 or 160
1940	SAE 140	Mild EP 140 o 160
1941	Mild EP 90	--
1946	Mild EP SAE 140 summer Mild EP SAE 80 winter	Mild EP SAE 140 summer Mild EP SAE 90 winter
1953	Mild EP SAE 80 (all temperatures)	Hypoid SAE 90 SAE 80 below –10°F

What to use in the transmission?

Here is a quote from a seeming knowledgeable guy who had several postings on the Fordbarn website on the subject of gear lube – "EP (extreme pressure) came about to service the hypoid style gears in difs and other general applications using sliding contact, rather than rolling contact." Our old closed-tube Ford drivelines are not hypoid style. However, in 1949, Ford adopted hypoid style differentials and the requirements for lubricants changed accordingly. More recently, gear oils have been reformulated from the GL-4 specification to the GL-5 specification.

When this happened, the lubricant manufacturers soon found out that the new EP additive package, which contained more sulfur-based compounds, was too aggressive and attacked the so-called yellow alloys (the copper-based alloys, brass and bronze) found in many transmissions. In ours and many other transmissions, syncros and thrust bushings are copper-based alloys, so our transmissions were at risk. The lubricant manufacturers quickly reformulated their GL-5 EP additive package for lower sulfur-based compounds. However, the GL-5 lubricants still contain a more aggressive additive than the old GL-4 lubricants. Is this a still a problem for our transmissions? Opinion is split on this.

The gear oil that does not contain the additives was defined as GL-1 material. It is impossible to find GL-1 lube nowadays. The closest is the 600W that is specified for Model T's and A's and repackaged by Mac's. It is Mobil cylinder oil, which is designed for use in all steam engine applications and enclosed worm gears. It has the equivalent viscosity of SAE 140 gear oil, according to the Mobil Oil web site. 600W will not affect any "yellow" parts.

However, there are Redline products, MTL (manual trans lube) and MT90, which are synthetics with GL-4 additive packages. They are appropriate for brass/bronze parts usage, according to Redline. On their website, Redline states that "the use of a GL-5 lubricant in a synchromesh transmission will shorten the synchronizer life by one half." That's a pretty strong statement and it's not clear what their proof is. But they also state that their "GL-4 lubricant provides adequate protection for most manual transmissions." As an added bonus they also claim on their web site that these products "have the appropriate coefficient of friction for most manual transmission synchronizers (many gear oils, engine oils, and ATFs are too slippery for proper synchro engagement). And, the wide viscosity of MTL and MT-90 allow proper shifting over the entire temperature range which the transmission will experience." Some think that synthetics will make their transmission leak. However, the editor has used Amsoil in his differential without a problem. Are Gl-5 lubricants a problem with our manual transmissions?

We really don't know but using the Redline products seems like an easy and less risky thing to do. Both of us plan on using them.. MTL has to be mail ordered at $8.75 a quart plus UPS at www.ogracing.com. By the way, the owner's manual suggests that the transmission lube be changed every 5,000 miles for the 1932 thru 1946 at least and every 10,000 miles for the 1953 – with the synthetic, it would probably last forever.

Now what about the differential?

"Mild" extreme pressure is an oxy-moron, in our opinion but it's a term we're stuck with. GL-4 or GL-5 EP, either mineral based or synthetic in the weight specified (all are now multiple viscosity) will work according to the discussion on the forum. What if you have a Columbia that has brass parts? We need to check this further. It may be that the GL-4 gear oils would also work in these non-hypoid differentials or it may be that the current GL-5 lubricants are still necessary and are sufficiently less aggressive to not damage the "yellow" parts. We need to check further on this and we'll try to give an update in a later article.

TURN SIGNALS INSTALL THEM FOR SAFETY

Art Spero

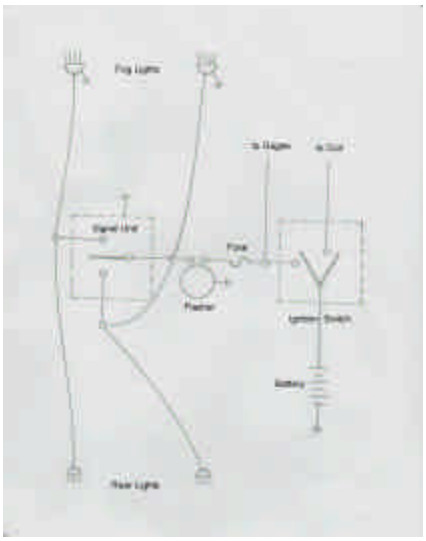
How many times have you been out for a ride in your V-8 and wished the other drivers on the road understood old fashion hand signals? Most of you know what I mean……put your arm out the window, bend your elbow and point your fingers up for a right turn, or straight out for a left turn. If you are lucky, the least that will happen will be an obscene gesture from anyone born after 1955 who thinks you are either waving to them or giving them the "reserve salute". But, if you are really unlucky, your V-8 could end up in the body shop along with you in the doctor's office, or worse. Along with seat belts, electric turn signals can be a very prudent addition to your V-8. Both are relatively easy to install. If you do not feel sufficiently versed in 6volt automobile wiring, there are many club members ready and willing to help get the job done for you. A word of caution: For those interested in maximizing show points, EFV8CA rules allow only "temporary" turn signals. This article addresses permanent installations. For those of you with "modern" V-8s, consider yourselves fortunate……you already have factory installed signals.

There are several ways to accomplish turn signal installation, both for the lamps themselves as well as for wiring. For the front, you can use the existing cowl lights or "park" lights. You may need to convert the bulb socket fixture to a 2-filament unit, however. For the rear, you can use existing taillights, utilizing the brake light portion for the turn signal. Obviously, this is not a practical solution for those V-8s with a single taillight. In my brother's case, his '40 coupe is a "Standard", but he installed the second taillight when he restored the car. Be aware that the candlepower of these may very well be so low as to be non-visible during the day, especially in bright sunlight. Even the so-called "bright bulbs" and halogen bulbs installed in a unit with an old reflector can be insufficient in sunlight. There are specialty aftermarket companies that carry LED (light emitting diode) taillights for some V-8s, but they are quite expensive and the lenses and hardware do not look very authentic. They also have the limitation of being "directional" (no pun) with restrictive view from off-angles. If you are more concerned with safety than authenticity, you can adapt other light fixtures to do the job. My brother's '40 coupe is definitely a "show quality" car, but he chooses not put it in shows. So, he decided to wire up his NOS 4" fog lights in front and, since the '40 "Chevron" taillights are notoriously hard to see even at night, a set of converted '34 Ford cowl lights in the rear (see Figures 1 and 2). The candlepower of those lights is more than adequate for sunlight visibility. The fog lights have amber sealed beam bulbs, and the rear lights use amber painted bulbs. Both are very functional and effective at all times.

I have found there are at least two different types of turn signal units: so-called 5-wire and 7-wire units. From what I can determine, the 5-wire unit is intended for use outside the factory wiring harness (all new wiring and lights), and the 7-wire unit is intended to be integral with the factory wiring harness (use existing lights and brake light circuit) and factory installed lights. The 7-wire unit can be altered to use with all new lights. I do not think the reverse is true, however. Maybe someone who knows the real reasons can write in. You will need to decide which way you want to go before you purchase the turn signal unit. Also, I have seen several styles of units: some are "Art-Deco"; some are "Utilitarian"; some are self-canceling, incorporating a "rubber" disk that moves as the steering wheel rotates; some are non-canceling and must be manually moved back to "neutral" after you complete the turn; some have indicator lights to show left or right turns; some have an indicator light for the brake light; some even incorporate a "hazard" light function similar to modern cars. I am sure there must be other variations on style. They all use a clamp to affix the unit to the steering column and are not truly permanent installations.

Whichever style turn signal unit you decide to use, you will also need the following materials: an in-line fuse rated per the manufacturer; a 6-volt positive ground turn signal flasher (available from several "re-pop" houses"); a 2- or 3-prong (depending on the signal unit flasher requirements) sealed beam headlight connector with a few inches of 14 gage or heavier wire (this connector is for the flasher); a few feet of color coded 14 gage or heavier stranded wire, preferably coded differently for each leg of the 5 or 7 wire signal unit. Other miscellaneous materials needed are wire terminals and connectors, "tie-wraps" to keep things neat, some "shrink-wrap" or electrical tape, and a good wire stripper/crimper. An added safety feature would be the use of electric relays if you plan to use high candlepower (high amperage) bulbs. There are two types of relays: electronic (mini-circuit boards with resistors and diodes) and mechanical (electro-magnetic with coils and springs). The use of relays will reduce the current load through the "OFF/ON" ignition switch on your steering column, and keep the wiring from over heating, or possibly worse…….burning. For my brother's car, we could not locate any 6-volt positive ground relays, so we wired the turn signal unit "temporarily" directly to the lights, but leaving the provision in the wiring for relays on the fog lights when they are eventually found. I have read somewhere that a V-8 horn relay can be modified for such a use, but have not yet tried to figure out how. Maybe a reader will know. In the mean time, the search continues for 6-volt positive ground relays.

As for the actual wiring paths and connections, the manufacturer's instructions are truly helpful. However, if those are not available, you can readily "figure it out" with a bit of logic and a volt-ohm meter to determine the manufacturer's color coding scheme for front, back, left, right, and brakes (if you use the 7-wire unit). On a bench, without power to the unit, use the "ohm" portion of the meter to determine continuity in the wires while moving the turn signal handle from left to right. Remember there will always be a "hot" input wire and a "ground" wire. Figure 3 shows a general wiring diagram that you can use as a staring point.



When locating a place to tie in the "hot" lead for power input to the unit you should avoid connecting to the "coil" terminal on the ignition switch. Splitting power there will decrease the current available to the coil and points and may very well cause poor engine performance. On the '40 switch there are three terminals marked "battery", "coil" and "gage" (for the instrument cluster and everything else that is an "accessory"). We chose to connect the turn signal to this latter terminal. It will have no current with the switch in the "OFF" position, rather than have it "live" all the time. I believe all V-8 switches through '48 are similar. I do not know about the later V-8s. We routed the rear light wires along side the existing wire loom and against the frame between the rear of the car and the engine side of the firewall, using tie-wraps every foot or so to keep things neat and out of sight. We routed the fog light wires in a similar fashion, around the radiator and through the engine bay, again, along side an existing wire loom. All four wires were then routed through the firewall adjacent to the steering column,

then up through the dash to the turn signal unit. The flasher, all wires and connections were then neatly tied up under the dash.

All parts and pieces to attach the fog lights to the front bumper brackets, along with an ample supply of wire, were supplied with those lights. We did find the NOS fabric wire cover was a bit on the brittle side. With some TLC we were able to properly route the wires without damaging the cover. However we needed brackets to attach the rear lights. We made these to fit this particular application using 1/16-inch aluminum stock. The '34 cowl lights attach to the bumper bracket bolt and make an attractive installation on the '40. We made a template from cardboard and traced it onto the aluminum. Each bracket is "L" shaped, approximately 1-3/4 inches on each leg: unobtrusive and effective. We then cut out the two aluminum brackets, rounded all corners, drilled them out for the attachment bolts, and bent them at a right angle to fit. Finally, we de-burred the metal, sanded the brackets smooth, cleaned the metal, applied aluminum primer, then a couple finish coats of paint.

After all the wiring was complete and the lights installed we crossed our fingers and switched on the power: everything worked fine! Imagine that!! Now my brother drives his '40 coupe with a lot more confidence knowing other drivers will be able to see his turn signals.

TOURING SAFETY AND COURTESY GUIDELINES

- All members who are planning to participate in Club outing should R.S.P.V. to the tour leader well in advance of the outing so that proper arrangements may be made.

- Tour participants should remain together going and returning. UNLESS PRIOR ARRANGEMENTS ARE MADE WITH THE TOUR LEADER.

- If an emergency occurs which requires a participant to leave the tour, another car should be sent with the departing member. NO ONE SHOULD BE LEFT ALONE ALONG THE SIDE OF THE ROAD.

- Where possible, maps or other printed information should be furnished to each driver denoting the destination, routes to be taken going and returning, as well as designating a starting and ending location in order that all participants are informed.

- The tour leader should have a meeting for the drivers and navigators before the tour starts and before the return trip to go over any questions and/or changes.

- Regular rest stops should be scheduled to accommodate the needs and comfort of the tour participants.

- The speed of the tour should be set to accommodate the slowest vehicle. If necessary, place the slowest vehicle in the lead position.

- In order to remain together (i.e., no stragglers), each driver should set his speed to stay in view of the car behind him.

- Those members who have hand-held "Talk-About Radios" should have them in working order and in their vehicles. Everyone should agree on which channel to use before the tour starts.

- The tour should travel in a properly spaced fashion. Vehicles should keep to the right and pull over to allow faster traffic to safely pass. Our courtesy will be appreciated.

- On tours with many vehicles, the caravan should be broken up into smaller groups. Each smaller group should have a leader and a means to communicate with the rest of the participants.

- Those traveling in modern cars should travel at the rear of the caravan because they can speed up or slow down more easily. In addition, their turn signals and hazard lights provide added safety.

- With a little courtesy, thought and planning, touring can be safe and fun. That's the whole idea of enjoying our vehicles.

WD 40

Ray Kunsman

The product began from a search for a rust preventative solvent and degreaser to protect missile parts. WD-40 was created in 1953 by three technicians at the San Diego Rocket Chemical Company. Its name comes from the project that was to find a "water displacement" compound. They were successful with the fortieth formulation, thus WD-40.

Here are some of the uses:

- Protects silver from tarnishing.
- Cleans and lubricates guitar strings.
- Gives floors that 'just-waxed' sheen without making it slippery.
- Keeps flies off cows.
- Restores and cleans chalkboards.
- Removes lipstick stains.
- Loosens stubborn zippers.
- Untangles jewelry chains.
- Removes stains from stainless steel sinks.
- Removes dirt and grime from the barbecue grill.
- Keeps ceramic/terra cotta garden pots from oxidizing.
- Removes tomato stains from clothing.
- Keeps glass shower doors free of water spots. >
- Camouflages scratches in ceramic and marble floors.
- Keeps scissors working smoothly.
- Lubricates noisy door hinges on vehicles and doors in homes.
- Gives a children's play gym slide a shine for a super fast slide.
- Lubricates gear shift and mower deck lever for ease of handling on riding mowers.
- Rids rocking chairs and swings of squeaky noises.
- Lubricates tracks in sticking home windows and makes them easier to open.
- Spraying an umbrella stem makes it easier to open and close.
- Restores and cleans padded leather dashboards in vehicles, as well as vinyl bumpers.
- Restores and cleans roof racks on vehicles.
- Lubricates and stops squeaks in electric fans.

- Lubricates wheel sprockets on tricycles, wagons and bicycles for easy handling.
- Lubricates fan belts on washers and dryers and keeps them running smoothly.
- Keeps rust from forming on saws and saw blades, and other tools.
- Removes splattered grease on stove.
- Keeps bathroom mirror from fogging.
- Keeps pigeons off the balcony. (they hate the smell)
- Removes all traces of duct tape.
- I have even heard of folks spraying it on their arms, hands, and knees to relieve arthritis pain.
- Florida's favorite use was "cleans and removes love bugs from grills and bumpers.
- The favorite use in the State of New York--WD-40 protects the Statue of Liberty from the elements.
- WD-40 attracts fish. Spray a LITTLE on live bait or lures and you will be catching the big one in no time. Also it's a lot cheaper than the chemical attractants that are made for just that purpose. Keep in mind though, using some chemical laced baits or lures for fishing are not allowed in some states.
- Use it for fire ant bites. It takes the sting away immediately, and stops the itch.
- WD-40 is great for removing crayon from walls. Spray on the mark and wipe with a clean rag.
- Also, if you've discovered that your teenage daughter has washed and dried a tube of lipstick with a load of laundry, saturate the lipstick spots with WD-40 and rewash. Presto! Lipstick is gone!
- If you sprayed WD-40 on the distributor cap, it would displace the moisture and allow the car to start.

WD-40, long known for its ability to remove leftover tape mung (sticky label tape), is also a lovely perfume and air freshener! Sprayed liberally on every hinge in the house, it leaves that distinctive clean fresh scent for up to two days! Seriously though, it removes black scuff marks from the kitchen floor! Use WD-40 for those nasty tar and scuff marks on flooring. It doesn't seem to harm the finish and you won't have to scrub nearly as hard to get them off. Just remember to open some windows if you have a lot of marks. Bug guts will eat away the finish on your car if not removed quickly! Use WD-40!

Word of caution: do not use it where you intend to paint – Silicone will cause "fish eyes" in the paint!

SPRINGING FOR GARAGE DOOR SAFETY CABLES

John Girman

I hit the button to close the garage door and started to go into the house when I heard a horrendous crash behind me. I turned and saw one of the coil springs for the garage door rolling across the floor. That spring was heavy and if it had hit someone, they would have been seriously injured; if it had hit one of the cars, it would have meant some significant body work. At first I thought the spring had broken but a closer look showed that one of the cables running between the spring and the door had broken.

I had thought about installing safety cables that run through the springs but hadn't got around to it, in part, because the springs were fairly new and I didn't think there was much risk of them breaking. I hadn't even considered the cables breaking. The broken cable didn't really look bad, having only a little surface rust in a few places. However, multi-strand cables have mostly surface so apparently they had been weakened enough to break.

I went to a building supply store the next day and bought cables for the garage door. But I also bought safety cables (less than $14 per door) and wire rope clips (about $2 per door). That's a small price to pay to prevent possible injury or damage. Because I used the clips, it took less than ten minutes per door to install the safety cable once I had the hardware. If I had used nuts and bolts to secure the cables, it would probably cost a little less but would have taken more time. No excuses, guys. If you haven't done it yet and if you care about your family or your cars, it's a quick and cheap thing to do.

REMOVING BROKEN HEAD STUDS

Editor

Cylinder heads bolts must be retorqued as required in the maintenance manual after removal of a head. Would you believe that the very last bolt sheared off when doing this maintenance? It was the most accessible bolt to have broken – top right on the right bank, so that was plus. The head came off easily with some rocking.

One of the studs was slightly tilted, not allowing the gasket or the head to drop down smoothly on the block. After soaking liberally with "Liquid Wrench" for days the offending stud came right out. With a K-D stud remover. The tool will work to loosen or tighten a stud.

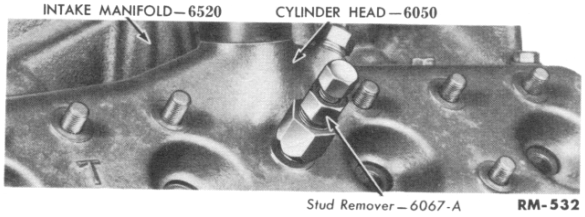


Fig. 5—Removing Cylinder Head Stud

Here is another type of remover that I have not seen. If the threads are shot, this guy will take out the offender without taking off the head!

The broken stud was soaked with "Liquid Wrench" also, and center punched as close as I could get with the canted surface. Of course after drilling with increasing larger drills the hole "walked" further off center. The auto parts store sold me a "Super Out" that is pounded in the hole and the protruding stem can be grabbed with the stud remover.

You guessed it – the extractor broke off!!!

After soul searching (calling other members) it was decided to try a trick that was described somewhere about welding a washer to the stub, than a nut to that with which to spin it out. A MIG welder was used for this procedure. Every time the nut was

turned, more of the stud would break off with the weld! Now there was a cavity!

Now, using cobalt drills I was ale to make several holes around the "Easyout" and enlarged them somewhat. Next came a Dremel with a carbide ball that was used to enlarge the cavity – they quickly wore out, so I borrowed a die grinder that is really a BIG Dremel that makes lots of noise. Using a tapered carbide bit I was able to grind away the Easyout – careful not to grind any of the block. Now, I put the head back on and used the hole as a guide for the 3/8th drill. A tap cleaned out the remains, but the stud still stuck out more than required. By center punching in the hole I drilled right into the water jacket and picked out the threads and re-tapped. Now, with Permatex on the threads the new stud went home!

CAM GRIND

Alan Wheilhan

Here is something that I learned recently about Ford camshafts. A customer sent a Lincoln HV-12 hydraulic lifter cam to be re-ground for us with solid adjustable lifters. He specifically wanted the 1953 Mercury grind which I did.

Than a customer asked if I had a solid grind V-12 cam. I did have a nice regrindable '36-'37 cam (these year V-12s used Ford solid hollow lifters and I mentioned I could do the stock Lincoln grind or the presumably desirable '53 Mercury grind. Not having the technical data on both grinds, we elected to do the Mercury grind on the Zephyr cam on the basis of hearsay rather than sound engineering analysis. As it turns out, the stock '37-'37 Zephyr cam has fatter lobes and is really the "hotter" cam grind. Although the Mercury grind has higher lift, it was apparently designed for good performance an a smoother idle. Probably this is a case of the Mercury grind being superior for "Show" and the Zephry for "go"!

REPLACING SMALL NUTS

Dave Westrate

I had to replace the windshield wiper tower on the passenger side of the 39 Woodie, as the chain drive was loose, and the wiper flopped around like a fish on the beach. To do this, I had to take the glove box out, which was somewhat of a challenge because of the tight spaces where the bolts and nuts were, which held it to the dash. Keep in mind that when I put this box in during the restoration, it was installed in the dash before the dash was put in the car. So, it was simple.

The wiper replacement went well and now to put the box back. The bolts in the two sides and the bottom were not too bad. The two on the top seemed impossible, because of their location and almost no room to work. I thought that it would take forever, if it could be done at all. My first attempt went poorly. Dropped the nut, couldn't find it, got out the magnet, etc., etc.

It occurred to me that if I could hold the small nut on my fingertip, I could reach across the top of the box to the bolt which was extended from inside the box into the tiny space between the box and the top of the dash. I took a small blob of "Bag Balm" (remember this stuff) on my fingertip, put the nut on it and went looking for the small bolt. I hit it on the first try. I got the second one on my first try also!

The principle is the same as how PolyGrip holds your upper denture to the roof of your mouth, but on a much smaller scale. I did not need to try it, but regular grease should work as well.

CHASSIS CLEAN UP AND INSPECTION

Clem Clement

On a fine chilly day last month I began a fixin process on my '39 Ford truck. Many of you know the truck as it belonged to our late club member Gill Williams. We are all just keepers of these wondrous vehicles and hold them a while, improve them and pass them for the enjoyment of others. Gil worked many many hours on the truck and he and Katie loved being out in it. I'm planning for the same enjoyment. Certainly no disrespect to our friend Gil, but I felt I needed to get to know my truck and to do so I wanted to visit every nut and bolt on her. Back in1951, when I began driving Mother's 1941 Ford super coupe (yes with the 2 jump seats aboard, I learned this tightening process. Lemme tellya about it.

Jack the car up on all fours using quality jacks, not those cheapo spot welded jobs. When the car is up and before you get under it, butt shake it side to side. If it talks, something is wrong with your jacking setup. BE safe and wear glasses. Now then, pick a day when you can't do anything else, shut off the cell phone, grab a pile of generic wrenches, your coveralls, a good set of safety glasses and a pillow (a nap may jump on ya whilst under the car and you should be prepared. Have chalk as well. I start at the front bumper and tighten everything you can see/reach as you move toward the rear of the car. Mark the bolt/nut with chalk after you have finished with it. You may get interrupted and can't remember.

What torque to use? If you hold the wrench close to the head and twist hard, you can generate about 5-10 foot pounds. At the end of a short wrench you can get a bit more. What you are interested in is those bolts that are really loose. If it is an engine or key bolt, your books will give the specs. For most, 10 is close enough. You will get the feel of things. Rusty tight one won't move. It is the loose ones(as the steering box had one as did the master cylinder) that you are worried about. Generally speaking, unless for some specific reason, bolts are installed head up and head facing the inside of the car so that if the nut falls off the bolt will stay in place. There are of course exceptions.

Henry was famous for not having empty holes. Some are there for right hand drive or accessory installation, but the general rule apples. So if you find an empty hole, see if there is any damage around the hole. This means something was there and you need to know why it isn't now. Cliff and I are wondering why I have a clutch bracket missing. Shake the tie rod ends to see how much slop there is in the tie rod joints. Inspect the exhaust system for leaks, looseness or frame contacts. One of my favorite accessories is a wooden clothes pin. The tapered half will work as a wonderful antirattle wedge for exhaust systems and the full pin is a great wire clamp. Inspect your hand brakes system for loose cable, rust and the such. A good wire brush and rattle can of black Rustoleum should be at hand for this process.

Bring lots of rags and wipe things down while there. Good time to change liquids in the tranny and pumpkin as well.

Enjoy the underneath of your car and the added knowledge and confidence about your old girl that this job brings.

RESTORING VINTAGE LICENSE PLATES

Art Sepro

Why would anyone want to do this? Restoring your old car's vintage license plates can be a good winter project. While your favorite vintage vehicle is resting in the "barn" for those seemingly long, cold, and some times snowy winter months, you can still enjoy the hobby……and maybe learn some new skills. It's a relatively easy project, even for the beginner. Anyone who has painted the trim on their house can do this. A modicum of patience, and a few dollars for supplies is all that is needed. There can be a lot of satisfaction when you see the finished product. And your vintage vehicle will be a bit more authentic as an added benefit. This particular project was a Christmas gift to my son for his 1931 Ford Model A coupe.

I have seen and read about many ways to restore vintage plates. They all seem adequate, some resulting in a bit nicer appearance than others. The various techniques used are most likely dependent upon the specific skills and comfort zone of the person. I have tried a variety of these techniques and have found one to be best suited to my skills. I will describe this below.

Where do you start? As a starting point, if you do not already have them, I recommend you purchase plates in the best condition you can find, and that meet your budget. There are quite a few dealers who specialize in vintage plates, both restored and un-restored. You will usually see them at local flea markets and places like Carlisle and Hershey. Sometimes you will even see used plates at yard sales. Internet sales are another source, however, it may be a bit difficult to determine their true condition and quality. Club members can also be a good source for vintage plates. If you find very nice original plates, you will be faced with a tough decision – restore or use as-is. My choice is always latter one. It's hard to beat the originals, even with a few defects. I currently have a very nice used set on my 1940 Ford coupe, blemishes and all. I wouldn't think about restoring them. The car has won two "Best of Show" awards and an AACA "First in Class" with these plates. Badly rusted or bent tin will require skills similar to fixing a dented and rusted body panel. Unless you are a glutton for punishment, or cannot get better examples, this seems to be much more work than the return is worth. For marginally more dollars you can usually find a set of straight, surface rusted plates and save a lot of work. I have purchased plates in a variety of conditions, including NOS, very good used, not so good used, and restored vintage plates. I prefer the NOS plates, but the cost can be very high, and they are usually quite scarce. You will find that NOS plates, more often than not, will have blemishes and defects in the background paint as well as the raised numerals and letters. I found this to be true for a set of "still in the envelope" 1940 Virginia plates I purchased 10 years ago. After all, you need to keep in mind prisoners who were not necessarily artisans made them, and, probably more importantly, they were intended to last only one year. The paint can be blotchy and very "thin" on the background, and imprecise on the numerals. Keep these things in mind when restoring your plates…..perfection is far from the goal. The several sets of already restored plates I have purchased are of varying quality, none of which do I consider top quality workmanship. Nor do any of them replicate the look resulting from the process used on the originals. They all look adequate from a few feet away, however the degree of attention on details was not what I wanted. Those were the driving reasons for me to try restoring a set of plates myself. As an aside, prices of restored plates do not seem to correlate well with quality of work, but rather with the specific year needed and availability at the time you want them. Prices seem to fluctuate considerably. To me, there is no apparent rhyme or reason for this.

What materials and tools? Most of the tools required to restore a set of vintage plates in fairly good condition will already be in your shop. The one exception might be a bead blasting cabinet. If you do not have one, check with your friendly club members, or the local schools to "borrow" a few minutes usage. In a pinch, a wire brush and coarse sand paper (100 grit) can work fine, but will create a bit of dust…..remember to use a mask for breathing! For plates with bent tin, a set of body dollies and hammers will be most useful. More creative people could use some scrap metal pieces, a vice and a light hammer in place of the body set. For those with holes rusted through, a set of oxy-acetylene torches and brazing skills will be required……but that's for another article.

Paint supplies will include self etching primer for bare metal, a "hi-fill" primer for shallow pits, a body putty for deeper pits, sandable primer, single stage color finish (to match the original year of issue background), and "1-Shot" sign lettering paint (to match the original year of issue numerals and letters). You can get the lettering paint at an art supply store. All of the primers and the color finish paints can be obtained from your local auto supply house as "rattle cans", or your auto paint supplier in un-mixed 1-pint cans as well as appropriate solvents and hardeners. I used the "rattle cans" for this project since the small quantities needed seemed hardly worth the time and effort to prepare and clean my compressor driven spray guns. As an alternative, an airbrush may be your choice, depending on your skill level. You will also need some 220 grit sand paper, small quantities of a degreaser (I use Dupont 3919S "Prep-Sol"), mineral spirits, and, depending on your paint application skills, a fine polishing compound.

To obtain the look of the original process, I chose to paint the large numerals with a roller. I tried a few different rollers and techniques before I was satisfied with the results and finally selected something called a 6" side nap roller sold under the name "WHIZ Roller System". These are available at your local home supply centers. This particular roller has very a short nap (approximately 1/16"), such that the paint does not flow down onto the background portion of the plate. It works very much like an ink roller used by old time type setters……similar to what I understand to be the process used for the original plates. As an alternative, you can use a flat 3/8" artist's lettering brush. I tried this method, but preferred the roller for a more authentic look. From their appearance, I would say that all of the restored plates I have purchased have brushed rather than rolled raised numerals. I do not know the reason for this. If your plates are almost perfectly flat, you will also be able to paint the smaller raised letters (state) and numerals (year), and the perimeter stripe (Note: some plates do not have this stripe), with the roller. I found most plates to be warped at least to some degree and level, seemed to closely replicate the original plate appearance.

Some useful tips was unable to produce a satisfactory result with the roller. I think someone with sufficient patience and skills could do it, however. My final selection for the smaller stuff was to use a #1 white sable artist's brush obtained at an art supply store. This brush, along with my particular skill. Most projects have a variety of methods and techniques to obtain satisfactory results. This one is no different. A simple description of the process would be clean, straighten and paint your plates. Obvious, but not very helpful. The methods, techniques and

process I used to restore a set of vintage license plates are described as follows:

Immediately after bead blasting both sides of the plates clean the surfaces thoroughly with a degreaser/solvent. As soon as the degreaser dries apply a coat of self etching primer. This prevents the onset of oxidation (rust) and provides a solid base for follow on paint systems. Using body dollies and hammers, straighten any bent tin. Re-prime as necessary. Fill in pits with a thin coat of body putty, or "hi-fill" primer. Use putty for deep pits, hi-fill primer for shallow pits. Epoxy body fillers (like "BONDO") are not needed or recommended. Sand the putty/hi-fill primer with 220 grit paper and apply a light coat of sandable primer. Repeat this step until the surface quality is satisfactory. Clean the plates thoroughly with Prep-Sol and the plates are ready for the first color coat of paint. It is best to use disposable gloves throughout this process to both avoid chemical contact with your skin, and keep oily fingerprints off the work surfaces. Also, it is advisable to use a respirator or appropriate breathing filter to avoid ingestion of dangerous chemicals.

The background color paint is sprayed first. Build the color gradually. Multiple (2 or 3), light coats of color paint are best. Patience is critical! Avoid the temptation to spray heavy coats. This will likely result in runs and sags, and turn the project into a real headache. The final coat needs to be a bit heavier (wetter) so the paint will flow a bit and settle out to a smooth, lustrous finish after the solvent flashes. Complete painting the reverse side of each plate first. This allows ample space for a technique "learning curve", and this side will usually be hidden when the plates are on the car. Any imperfections can be sanded out and re-sprayed after the paint dries sufficiently. Bare metal spots need to be re-primed. After the reverse sides are completely dry, the fronts can be painted using the same techniques.

The large, raised numerals are painted using the roller. Load the roller with "1-Shot" paint and roll out most of the paint on a clean, flat surface such as newspaper, scrap paper, sheet rock or a board. The roller will be almost dry, but will be just right to apply a light coat to the numerals. Roller pressure on the numerals should be light to assure covering the raised portion only. "1-Shot" is very forgiving - any mistakes or unsatisfactory results can easily be removed with mineral spirits within a few minutes. Two very light coats normally give the best results. Small imperfections are OK……remember the originals were not perfect! If any touch up is needed, use a #1 artist's brush. The "1-Shot" repair will flow evenly and will be imperceptible when dry.

The final step is painting the small raised state letters and year, as well as the perimeter stripe if the original plates had one. Using the #1 artist's brush, slowly, but steadily stripe the numerals and letters. Try a few practice strokes on a test piece to adjust the amount of paint on the brush. One continuous stroke will give the best results. When necessary, reload the brush and continue. The "1-Shot" paint will flow and dry as if there were no breaks. Any mistakes or unsatisfactory results are easily removed with mineral spirits. Again, patience is important!

KEEPING YOUR (V8) COOL

Jim LaBaugh – Report on talk by John Girman

Flathead Ford's run hot, so how do we keep our flatheads cool? John Girman provided part of the answer at the September meeting with his thorough overview on the subject of coolants. Water has been the mainstay coolant, but over the years various additives have extended the range of freezing and boiling points beyond the 32oF to 212oF range of water. Early additives included sugar, molasses, kerosene, and methanol. However, some of these additives were corrosive and flammable. In 1927 ethylene glycol became available, then anti-corrosion additives in the 1930's, silicate copolymer additives in the 1970's. The coolant propylene glycol was introduced in the 1990s, having the advantage of low toxicity, and later in the 1990s extended life coolants arrived. Another additive of recent vintage is organic acid technology; however these are not suitable for vintage cars.

John pointed out that although water is the best coolant, it is corrosive. So, over the years various additives have become available to minimize this corrosive effect, including silicates, molybdate, benzoate, nitrate, and borates. Different corrosion inhibitors protect different metals. What may be good for an aluminum block engine may not be the same as what is needed for the milled steel and cast iron of Henry's flathead finest. It is important to change coolants on schedule as they change over time. Ethylene glycol forms glycolic acid for example. Thus, it should be changed every 2-3 years or 30,000 miles. Polypropylene glycol mixes well with water and is less corrosive over time and needs to be changed every 4 years.

For some time coolants had been identifiable by color, but that is changing. John also stressed not to mix types of coolants and additives. Finally, John indicated that it is important to choose a coolant and stick with it. Flush well if changing coolants. .Do not use organic acid technology (OAT)coolant/additives in collector cars. Change coolant a regular intervals – every 2 to 3 years. Properly dispose of coolants.

Test the coolant – this can be done with a hydrometer, pH strips, and a voltage test for electrolysis. The voltage test is done by placing the positive lead of a volt meter on the radiator metal and the negative lead in the coolant in the radiator. A reading of 0.2 V or less is good ,0.5 V is borderline, and 0.7 V is unacceptable.

THE CONDENSER

Editor

One of the culprits of the ignition system is the condenser. This little device can stop the car from running at any time when it becomes shorted or open. It can cause the points to pit and consequently effect the dwell.

The purpose of the condenser is to absorb the spark that would occur when the points just start to open and prevent the points from burning and pitting. It provides current storage until the points are fully opened then is discharged back through the primary The capacity value is measured

in microfarads and varies with different ignition systems. For the early flathead V8, the book states that the prewar engine condenser should measure .330-.360 microfarads and the post war .290-.320. Any value lesser or greater will cause the points to burn and pit prematurely which would effect the dwell. Now, how do we measure this without the fancy Ford Laboratory Testing Machine, which has a feature to conduct such a test? There is an inexpensive digital meter available on line or from Grainger's that will do this. The A/C repairman who replaced my fan motor had one to check the starting capacitor. I borrowed it to check all the condensers that I had stockpiled and wrote the value on each on. Of the ten that I had, only three registered the proper value as specified in the service manual! Of course, the meter will also show if the condenser is shorted or open by not registering. Now, this is only part of the test. We need to simulate the heat of the engine by placing the condenser in the oven (not microwave) and heat it up 150 degrees and run the test again!

The condition of a 50 plus year old condenser should always be suspect even if NOS out of the box. How do we check it in the field? With the use of a battery operated ohmmeter with a needle (not digital). Set the meter to the lowest setting. Ground the negative lead or terminal to the case in order to discharge it. Then with the ground wire of the meter held to the can, touch the other lead to the terminal. The needle should jump up and recede. All this does is determine that the condenser is not shorted or open. We have known idea of its capacitance value.

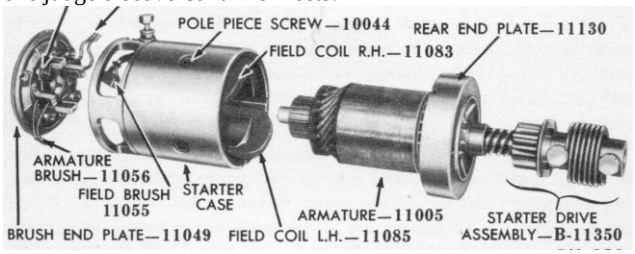
So, the culprit can be tested to eliminate one of the most frequent causes of ignition failure. Condensers do have a life, which can not be determined, so it is advisable to change it every time the points are changed and keep a spare in the toolbox. Of course, those running with the electronic system do not have to worry about this. (BTY, the electronic distributor is not being produced anymore.) Grainger.com – Supco, model MDF10 @ $66.90

CORRECT STARTER MOTOR

Editor

On page four of the National judging sheet, the judge would make a decision about the starter. There is a max deduction of 5 points. Would this be if the starter motor where missing, the full deduction would be taken? Then what is the judge looking for? He is checking that the correct starter motor is installed and, starting in 1938, that the 11140 bracket (starter to oil pan attaching) is present. Also, that it is painted a gloss black and the correct size cable is attached. Maybe!

It came to my attention at the Frederick meet that most restorers do no know what is the correct motor for the '37-'48's , including the Lincolns. Most of the cars are using the service replacement motor that was used in the '49 and up models. I was using the wrong starter motor on my '40 until last year and not one judge discovered it in 8 meets!



Notice that the rear end plate (18-11130) is wide – about one inch – the service replacement has a thin (5/16") end plate (7RA-11130). Now, you '37 – '48 owners, rush out to the garage and take a peek – I bet you never noticed. The judges don't. So, why is this important? Our mission is to restore the car as it came from the factory/dealer and that is important to some V8'ers to be correct. Also, you do not want to chance a 4-point deduction for wrong starter motor. The 18-11002 motors are not very plentiful. They were thrown out rather than being rebuilt and the service replacement were installed. This motor should crank the engine at 100 RPM taking 190-215 amps. The max cranking time is 15 seconds and then a cooling time of 30 seconds before a second attempt. If there is sluggish performance, make sure that the mounting surfaces of both the starter end plate and the oil pan are free of paint to provide a good ground.

The 1940 woodie has a low-pressure area behind the tailgate and exhaust fumes would be faintly present – no big deal if the proper windows were rolled down. This never satisfied my wife who is hyper sensitive to such odors (garage smells). It became unpleasant for her to ride with me and it finally came to a head when she refused to come along until something was done.

My early solution was to install one of the exhaust deflectors that are produced by Carpenter with the V8 on the top (unauthorized accessory, two point deduction). This helped with the windows down. When on the Club tour out in the Shenandoah valley, we stopped to visit and tour Bob Wild's garage. I mentioned about the fumes still vaguely present. His son-in-law attached an extension on to the tail pipe which fixed the problem.

A member was having a tail pipe made up for his panel truck longer than stock. That sounded like a good idea, so I took mine off and had one bent up 9" longer. Now things looked and smelled good!

Come to find out, through emails with a new '40 woodie owner in Tenn, that he investigated the tailpipe issue also. In the 1938-39-40 Chassis parts book, Feb 1940, there is one part number (91A-5255) that fits all. Looking in the "Green" book Nov 1950, there is a Muffler Outlet and Extension Pipe Chart. Here the 91A pipe (80" long) fits all '40's except the pickup. There is also a 48- pipe (82" long) that also fits 1935-40. Reading down the list one notes that the '41 station wagon tailpipe is a separate item, being 6" longer that the passenger. Hummm! Did Ford engineering finally correct the problem for '41? What happened to '40? Well, looking still further to the last item on the chart, on the next page, there is a 91AS-5263, 7.36" for the 1939 and '40 station wagon. There is an asterisk beside the part number, and on the bottom of the page = "Use as extension pipe"….VOILA! Apparently, there were complaints just like my wife's back in '40 and Ford did come out with a fix. Always learning!

BTY – the original outside diameter of the tailpipes from 1932 – 1937 is 1 ½", from 1938-41 – 1 5/8", 1942-48 – 1 ¾". The pipe benders only have 1 ¾" these days. I have no info on the 1949-53.

A PRIMER ON PAINTING

Jim Labaugh reporting on a talk by Bill Beardmore

What does the paint on your Early Ford V8 and rubber bands have in common? What part of the painting process "shows you a whole lot of things you don't want to see?" What thickness of paint is detectable by touch? How many coats of paint are too much of a good thing?

These questions and more were answered by Bill Beardmore's presentation to over 30 club members at the March meeting

Bill retired from the Prince George's County Fire Department, went into the body shop business 30 years ago, and has been restoring old cars for the past 15 years. At a recent Armed Forces home meet, his stunning '61 Caddy got the attention of a club member (help me out here Cliff, I missed the name of our club member at the meeting. If you know who it was, please put his name here. Thanks.). Their conversation about the finish on the Caddy led to an invitation to Bill to tell us all about painting and the prep work that is essential to a finely finished vintage automobile or truck.

A picture of Bill's '29 Ford in its restored condition began an in depth overview of the state of painting today. He noted that checked or cracked paint, on barn fresh, rouge ready, or even recently restored cars with numerous coats of handrubbed lacquer, is a sign of too much paint. A thinner coat of paint, like a thinner rubber band, is more elastic. A thick coat cannot expand and contract as easily; breaks occur in the paint over time. Over 800ths of an inch is too thick. Although your hand can feel differences of 2,000 to 3,000th s of an inch, a paint gauge is a better guide to how thick the paint is on your vehicle. Bill explained and showed us that the gauge consist of a magnet on the end of a rod marked in thickness of paint surrounded by an outer sleeve connected to the rod by a spring. The gauge is placed on the paint surface and as the outer sleeve is pulled away from the paint, the inner sleeve with the magnet remains on the car until the thickness of the paint is reached. Of course it doesn't work on fiberglass!

Throughout his presentation Bill stressed that anyone painting needs to READ THE LABELS and USE APPROPRIATE safety equipment. Safety is number 1. Lacquer paint is old technology, required more involved special breathing gear, and items painted with it will rust eventually. Newer paints, like the acrylic enamels, and base coat/clear coat, are more elastic, but still require appropriate safety gear – many contain isocyanates.

Of course, good prep work is key to painting success. Bill provided many details about the steps from rust to finished added many details about the steps from rust to finished product. He noted that sand blasting shows "whole lots of things you don't want to see, but gets you where you need to be." A primer guide coat helps to find high and low spots. Sanding at this point can remove the highs. Wet sanding and the need to use the correct pads and technique were essentials at this stage. Proper ventilation and attention to the to the temperature are also keys as each stage of painting is done. The new paints are designed for lower pressure delivery by the new spray guns – the old spray guns won't work well with the new paints. With the modern equipment and paints, 2-3 coats of base coat, followed by clear coat provide a flexible and durable finish for that old Ford of yours.

WOODGRAINING MY '42

Bob Wild

My first attempt at dash woodgraining was on my 1939 standard woodie. I bought the booklet "Woodgraining: A New Approach" by Bob Durham and followed his procedures closely. When the time came to restore the dash and molding on my '42 Ford convertible I used the same system. According to the late Ken Brown the dash on the '42 convertibles and woodies was called Sequoia.

I had already removed the dash, the necessary first step. The next steps are very important. You determine the base coat color and, hopefully, an example of the original woodgraining. The base coat color should show on the rear of the dash. I found an excellent example of the original woodgraining on the glove box door under where the stainless steel trim piece was fastened. Take several high quality color photos of the original woodgraining, before sandblasting the dash and moldings select the paint for the base coat. Prime the pieces with a good quality primer/surfacer. Also prime several small pieces of scrap metal to be use later for testing. Sand the pieces carefully and apply the base coat to both the front and rear of all the pieces. Lightly sand the base coat with fine sandpaper. Now you are ready to wood grain.

Beautiful graining pattern found under trim strip

This system call for a rubber based printers ink. I used Cocoa Brown. You will need Litho Solvent (this is and all-purpose press wash solvent used in the printing industry) and a good supply of cheesecloth. Place a small dab of ink on a glass plate. Make a small pad of cheesecloth about one inch square. Fill a small shallow container with solvent. Dip the cheesecloth in the solvent and run it over the ink until the ink and solvent are mixed. Now apply the ink to one of the scarp pieces of metal discussed earlier and star experimenting to make a pattern like the woodgraining in the pots of the original. It will take several tries soak, when one doesn't work, take a separate rag dipped in the solvent and wipe of the unsatisfactory pattern. When you have developed a pattern you are satisfies with, you can now move to the dash and moldings. The glove box door and ashtrays, etc. should be in place on the dash to ensure a continuous pattern. All is not lost if you are not satisfied; you can still wipe off the ink with solvent and try again.

When the pieces are all woodgrained to your satisfaction, they should be let to stand for 24 hours in a dust free environment to allow the solvent to evaporate. The ink does not "set" during this period. The clear coat you are now ready to spray on will set the ink. I tried several brand of clear coat, using the scrap metal pieces I woodgrained earlier, until I found a brand that was compatible with the ink and base coat. I applied several clear coats sanding between coats with 600-grit paper.

BRIGHTER LIGHTS FOR SAFETY

Hank Dubois

How often have you taken your vintage Ford V8 out on the road at night? Not very often right? Truth is, the stock lighting on our V8s just doesn't hold a candle to that on modern vehicles and, when subjected to today's traffic and driving conditions, safety becomes a real concern. Dim headlights (especially on pre-'40 models) and even dimmer tail lights coupled with the limitations of aging eyes for many of us, can really put you at risk and make for an anxious ride home in the dark after attending a Club function, show, or cruise-in. Can these lights be improved to make your car safer and boost your night driving confidence? And, can these improvements be made without converting to 12 volts or otherwise changing the electrical system? The answer is yes to both questions.

In preparing for the safety program that I did at the September meeting, I enlisted the help of John Girman to conduct a number of tests on stock and improved headlights and tail lights. The tests were conducted in John's windowless basement using the light meter in a tripod-mounted 35mm camera to measure the intensity (brightness) of light cast by the various lights. Power was supplied by a constantly charged 6-volt battery and was monitored by a voltmeter to insure that each light tested received the same or very nearly the same voltage. Each light being tested was mounted on a Work-Mate table, which was kept at a constant distance from the light meter. The lights were aimed at the light meter to produce the optimum possible readings. The light meter readings were recorded and, using the stock headlight/tail light reading as the base line standard (factor of 1), converted into multiples of the standard.

Headlights

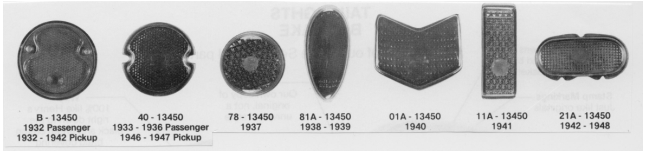
Our stock headlight was a '35 with a somewhat tarnished silver reflector that I had removed from one of my coupes. Silver is an excellent reflective coating but silver reflectors tarnish rather quickly and need to be polished periodically to maintain their reflective efficiency. When silver reflectors were in standard use, most of them were not maintained properly. It has been estimated that on most cars back then the reflectors were only about 40% efficient because of lack of maintenance. It's a good bet that most of the stock silver reflectors on our V8s today are also tarnished so we felt it was appropriate to use a tarnished reflector in our stock test headlight. We also tested a '35 headlight with a high-quality, maintenance-free, replacement reflector available from Bob Drake. Both headlights were tested with higher output 50/32 (hi/lo beam) candlepower bulbs as opposed to the stock original 32/32 CP bulbs. Finally, we tested an older, well-used 6-volt sealed beam headlight that is probably typical of the sealed beams in many '40-'53 V8s today. Unfortunately, we didn't have a new sealed beam headlight to test.

RESULTS OF HEADLIGHT TESTING

Type	Hi Beam	Low Beam
1. Old silvered reflector	1	1
2.New reflector	5.4	3.0
3. Old sealed beam	2.7	1.5

We were really surprised by these results. We expected the new reflector to be much brighter than the old tarnished silver reflector but not twice as bright as the old sealed beam. John speculated that vaporization of the tungsten element in the old sealed beam through use over the years deposited a film on the reflector within and thus lessened the reflective efficiency of the lamp. Testing a new sealed beam could have confirmed this. In any event, it is clear from our tests that new reflectors used with higher output 50/32 CP bulbs are a tremendous improvement over typically tarnished stock reflectors with stock bulbs in '32-'39 V8s. For '40-'53 V8s, you should probably check your sealed beams to see if they are new or nearly so in terms of the use they've had. It should also be noted that there are 6-volt halogen reflector/bulb kits available for '32-'39s and 6-volt halogen sealed beams for '40-'53s. However, these units draw considerably more amperage than the incandescent bulbs they replace and may create excess heat as well as over-burden stock electrical systems.

Tail lights



Our stock tail light was an after-market Guide Brand unit that closely resembles the stock '35-'36 tail light. And, like the '35-'36 light, it was painted gloss black inside. We tested the light first in stock form, then tested it lined with aluminum foil, then painted gloss white inside, and finally painted with reflective aluminum paint inside. All tests were conducted using a stock 21/3 CP Bulb (21 CP for the stop/brake light and 3 CP for the running light). Higher output 50/14 CP bulbs are available but we didn't have one to test.

RESULTS OF TAIL LIGHT TESTING

Type of Lining	Brightness	
	Running	Stop Light
1. Stock gloss black paint	1	1
2. Aluminum foil	2	2
3. Gloss white paint	2	2
4. Reflective aluminum paint	2	2

Again, we were surprised at these results although not as much as we were with the headlight test results. Each of the three "improved" lining surfaces resulted in a light that was essentially twice as bright as the stock light. If these improved linings were coupled with the higher output 50/14 CP bulbs, brightness should be at least four times greater than stock. The higher output bulbs do generate more heat though and should not be used with plastic lenses which many of our V8s don't have anyway. (I was not able to find a supplier of higher output single filament bulbs used in tail lights for '32 cars and '32-'42 commercials including woodies.) Double-contact 6-volt halogen bulbs are also available for '37-'53 and single contact halogen bulbs are available for '32 cars and '32-'42 commercials. (I couldn't find a supplier of such bulbs for '33-'36 cars.) Again, these bulbs generate more heat than stock bulbs and are not to be used with plastic lenses. Also, due to their higher amperage draw, they will burn out hydraulic brake light switches more quickly. (Cliff Green noted that Harley Davidson motorcycle brake light switches can be substituted to avoid this problem.) I have also read that, for double contact halogen bulbs in some tail lights, the running light is so bright that it may be difficult to clearly distinguish the stop/directional light at night. Finally, if you own a standard car, commercial, woodie, or truck with only 1 tail light, it would be a very good idea to install a second tail light.

Yes, the stock lighting of our early V8s can be dramatically improved by simply improving the reflective surfaces of headlights and/or tail lights, installing higher output bulbs, and, if necessary, adding a second tail light. So, let's get those lights shining brightly so that we can safely enjoy those V8 activities that involve night time driving.

BATTERY SERVICE

How to make a 6V battery last 12 years, 9 months like mine! Editor

That's right – almost 13 years!! I bought my '36 in 1994 and it came equipped with a PIERCE battery that the owner

had installed in October 1990. I bought a New Castle battery at Hershey in 1996 knowing that it would be needed soon. Well, I finally put that new one in only because one of the cells of the Pierce could not be brought up to full charge. I was going to Dearborn and did not want any starting problems. In other words, I could still crank the car – it did not need to be replaced!

How was this longevity accomplished, you ask? I placed a trickle charger ("Battery Tender") on the battery at least twice a month until the green light came on then took it off. I drove the car monthly during the off-season. I checked the battery water level and made sure that it was not overfilled. Another thing – the battery was never disconnected! Only a slight build up of powder occurred on the ground post.

Now, there is an instrument for sale at WalMart that is not a trickle charger, but a 6V/12V battery 1.5 amp maintainer with float-mode monitoring that sells for $16.99. It is called "*Everstart Battery Companion*". There are three LED lights on the front "Charging, Charged, Trouble." When connected the "Charging light" comes on until the battery is charged then the internal voltage reference is changed in order to maintain the charge with a few milliamperes (.001 ampere) current – notenough to lower the water level. With this device you can leave it connect without concern. And, at this price you can buy one for each vehicle! I learned of this charger on an internet forum – FordBarn.

COOLANTS AND THE FLATHEAD FORD V8

John Girman

Summer is just around the corner and sometime soon we can expect higher temperatures. Hopefully those higher temperatures will be outside air temperatures and not the engine temperature of your early Ford V8. Our engines are notorious for running warmer, in part due to the several feet of "exhaust manifold" buried within the block, which provides a source of heat to our engines not found in many other engines.

The higher engine temperatures can be caused, in part, by our choice of coolant. Despite all the advances in engine coolants, water remains the most efficient coolant for our engines. Why is this? It's because water has a higher specific heat than ethylene glycol, the principle component of coolant (or antifreeze). Specific heat is the amount of heat needed to raise a specific amount of the material, in this case the coolant, by a degree. This amount of heat is then compared to that of water as a standard or reference. This means the specific heat of water is 1.000 cal per gram per degree Celsius or 1.000 Btu per pound per degree Fahrenheit. The specific heat of ethylene glycol is about 0.55. (Note that I found values on the internet for the specific heat ranging from 0.54 to 0.58 for ethylene glycol because it depends also on the temperature at which it is measured. However, this variation is very small relative to the difference between 0.55 and 1.00, so we can ignore it.)

In plain terms, this means that ethylene glycol has only 55% of the ability of water to absorb heat and, all things being equal, will not cool our engines as well as water. (Of course, all things are never equal. There are other factors that affect the properties of a coolant, such as its boiling point, its specific gravity and its "wetting" ability. However, these generally have much less effect on cooling properties than the specific heat.) It also means that a 50:50 mix of water and ethylene glycol coolant will only cool about 77% as well as straight water.

Now, giving up about 23% of the cooling capacity is not a small thing. So why is ethylene glycol coolant used? It's used for several reasons. It protects against engine coolant freezing, it raises the coolant boiling point and it has anti-corrosion properties. Its use is possible, despite the fact that its cooling efficiency is inherently less than that of water, because of improvements in overall cooling systems. These improvements include better pumps and pressurized systems.

However, even at the end of the flathead V8 era, when cooling systems were pressurized, Ford was recommending the use of water as the coolant during the summer. The 1953 Ford Owner's Manual states "The radiator should be drained, flushed, and refilled with clean water every spring. Be sure that a good rust inhibitor is added when the radiator is filled. In the Fall, the radiator should be drained, flushed, and refilled with the proper amount of good anti-freeze. FoMoCo Anti-freeze is available at your Ford Dealer."

There you have it. If your engine runs cool even with ethylene glycol coolant, there is no reason to change your habits. However, if your engine runs hot, consider using water with a rust inhibitor (such as those sold as water pump lubricant) to see if that will help cooling. After all that's what Ford recommended when our cars were young.

SAFETY

Bob wild

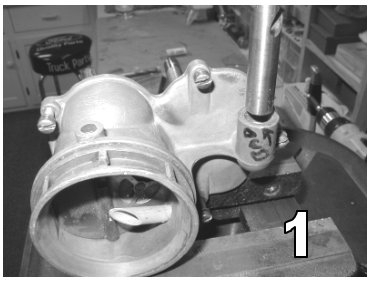
Accidents never provide any forewarning. Recently I sold my green '49 F-1 pickup and loaded it up to deliver it. On the way I rememberedI had not put the truck in gear, which I usually do, but it was securely tied down so didn't worry about it. On arrival I got out the ramps and my son-

in-law Ben started untying the tiedowns. The trailer was on a modest slope toward the rear. I was installing the left ramp when Ben called "look out". (the forward strap had broken.) The truck was coming back and I tried to block it with the ramp which was perpendicular to the truck. Didn't work, the truck rolled over one end of the ramp with my right leg under the other end. I got a very bruised leg and was probably lucky it wasn't broken. Other than my leg the only casualty was a broken tail light. We usually leave the steel cable to the winch for the last thing to release but not this time. The moral of the story, take your time loading and unloading and **Be Careful**.

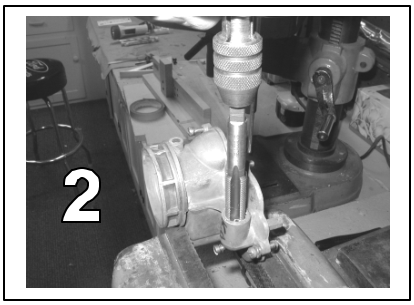
REPAIRING THREADS ON CAST PARTS

Editor

We all have carburetors and fuel pumps that have the inlet threads stripped from cross threading the lines. As careful as we are, it happens and there goes the part! Threads in castings do not stand a chance against the brass fittings. One way to prevent this from happening is after attaching the fuel line to the pump, then thread the fitting into the carb inlet BEFORE it is bolted to the manifold! This allows more play to insure the parts line up. Remember the threads do no prevent the fuel from leaking, it is the seat and the ferrel on the line.



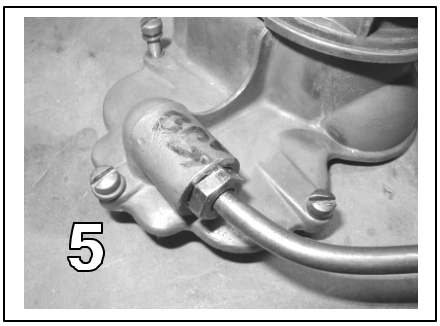
One of the ways to repair the part is to find another top half of a carb or fuel pump where the threads are good to replace it. This is becoming harder to do now days as the "junk parts" dry up, most have stripped threads and the prices are up. The prices of restored carbs and pumps are going up too – to the point where I believe it is worthwhile to find a way to repair the stripped threads. I have a bunch of 91-99 carbs that would sell for $100 restored – this seemed worth-while to me to invest in a *Helicoil* repair kit for $40.



Helicoil part number 5528-8 for ½-20 thread repair comes with ten stainless steel coils, tap, and installation tool. The required drill size/diameter is 33/64 (.516). I thought I could borrow the drill from machinist Steve Pieper, but no luck and I had to buy one for $17.

I am not a machinist, but a drill press and a drill press vise is all that is required to do the job – and a large tap wrench. The hardest part in the whole operation is clamping the part in the vise and aligning it with the drill bit! There is no real large flat surface to grip a carburetor top. The part has to be parallel to the table and the drill exactly perpendicular to the inlet hole. A slightly smaller drill bit can be inverted in the chuck and used as a guide to line things up then removed for the 33/64 as in figure 1. The depth of the drill into the inlet is important because you do not want to score the seat. Pres. Pieper advised me that the end of the drill bit can be ground to allow deeper penetration.

Now, after the hole is drilled the tap is run into the hole making sure that it is vertical – figure 2. The pot metal gives way easily to the tap. A stainless steel coil in inserted into the tool. A mandrel is rotated into the tool to engage a tang in the helicoil that allows it to be screwed into the tapped hole – figure 3. The helicoil is threaded ¼ inch below the surface and the mandrel removed. The tang is broken off with a punch and the finished job appears as in figure 4. The fuel line is now easily inserted into the new threads and can be tightened down without fear of destroying the pot metal.

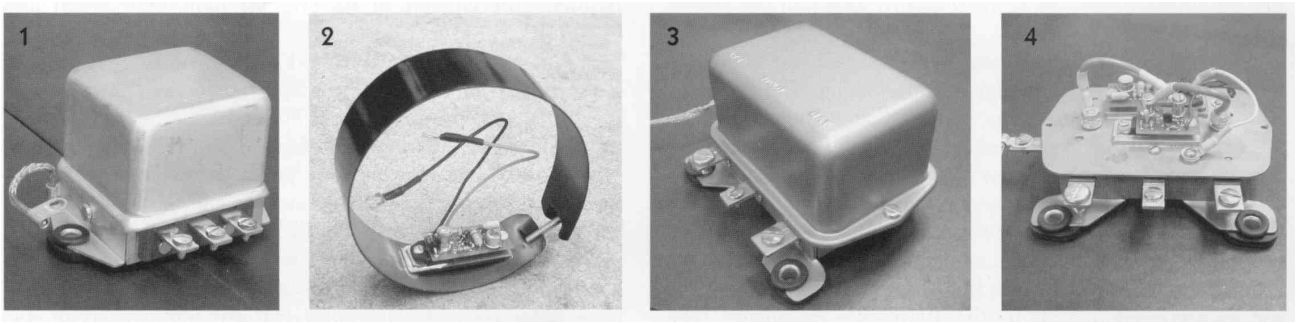


The helicoil: Provides a stronger assembly and eliminates thread wear, corrosion, galling, seizing and rust. The can be used to repair threads to their original size and condition. It worked for me! (Figure 5)

SOLID STATE VOLTAGE REGULATORS

Editor

After reading an excellent article in July-August "The Way of the Zephyr" about solid-state regulators, I decided to convert! I weighed the cost of $130 against reliability of the original equipment. I have had the experience of a voltage regulator point sticking and hence smoking the generator. The cost was about equal to find a NOS regulator and have the generator rebuilt. Granted, this has happened only once in 33 years of driving the woodie, but prior to just recently there were no other options but to remain stock! This solid state will take one of the parts of the charging system out of the worry equation!



James Peterson makes the solid-state conversions using your part – an 01A- regulator used from 1940 to '47. The covers are different for each year – the 1940 are plain, whereas later years have script depicting which wire goes where. Jim says, "The old mechanical relay type of voltage regulation was satisfactory in its day, but is quite primitive in comparison to today's precise solid state regulation". He restores the case, painting it cadmium and replaces the screws and ground wire – it is in show condition! Jim even provides two rivets to replace the screws that hold the cover on temporarily.

The following note accompanied my "new" part: "*Cliff, The complete original configuration will work with the solid-state reg. The correct charging voltage is set for approx. 7.25 volts. You have to be careful if you use a digital voltmeter near a running engine. Some meters pick up the electrical noise emitted by the ignition wires and can give you false readings. An old style analog meter is usually best when working on these old cars. I have a Fluke digital meter which is pretty much immune to this problem but some meters are real bad. The battery condition meter on your '40 Ford is a voltmeter, which operates by heating a bi-metal strip with a small heating coil. You never know how accurate they are unless it is tested. Once you put this new regulator on your car, which has been accurately set, the meter should read in the green. If it reads otherwise you could have it checked by putting 7.25 volts across it and see if it reads in the green. If your '40 regulator is grounded with a short braided wire to the firewall, you should also install an additional grounding strap somewhere on the car between the engine and body. This is to make sure there is no voltage difference between the firewall and generator. Later in 1940 Ford started providing an additional ground wire in the harness between the regulator and to a ground stud on the generator. This cured any regulation problems caused by voltage differences between the generator and firewall. Take Care, Jim"*

Jim also makes the rare 1939 little square regulator (91A-10505) that was made for only one year (actually late '38 sported this (81A-) along with a two brush generator). These gems were impossible to find – but no more. Also, Jim has help for the three-brush generator crowd too. How about a generator cover band with a solid-state unit inside that replaces the duties of the cut out! Of course a dummy cut out is mounted on top to fake the judges.

Jim Peterson may be called at 541-390-0438 or write POB 884, Bend Oregon 97709 for instructions. Don't be surprised if he calls you back from Prudoe Bay, Alaska where he spends some months at the oil fields. The long nights are occupied with solid-state restorations!

CONTINENTAL BRAKE PROBLEM *–S.L.Ross*

I was returning home, having driven my 48 Continental convertible to a regional antique car show in nearby Fairfax City, Virginia. As I rounded a gentle downhill curve, traveling at highway speed, I noted a traffic light. It was green but suddenly turned yellow at the "do I or don't I" decision point we all have experienced many times

However, the red Mustang in front of me made my decision for me as his brake lights came on. I stepped on the brakes pretty hard and-----SCREECH ---the right rear brake locked and the car began sliding out of my lane and those Mustang brake lights began to look as big as saucers! A quick glance over my right shoulder showed the right turn lane to be clear so I slacked off on the brake pedal enough to unlock the right wheel and literally threw that two-ton Continental into that lane! We missed the Mustang by inches!

You can bet that I nursed the car home, giving myself plenty of room to gently brake to a stop when needed. I got home safely and vowed to "ground" that blue beauty until the problem was solved. I decided to sleep on it for a day or so while I pondered possible causes and what I had done to the brake system during the restoration.

I had replaced all the brake lines- both hard and flexible and had put new lining on the shoes. The gentleman I bought the car from included in our deal four new brake drums and other miscellaneous parts he had bought from a Hershey vendor. I visually inspected them and installed the drums. I had rebuilt the master and brake cylinders and there were no hydraulic leaks after completing the restoration. Everything in the brake system was new or rebuilt! Where to start???

That night I decided to replace the flexible hose to the right rear brake cylinder. Years ago an Austin Healy I owned developed a heavy drag on the right rear wheel when braking hard. The wheel did lock up after it became extremely hot. That problem was solved by replacing the flexible hose to that wheel. The internal wall of the hose had failed creating a "flapper valve" which blocked the return of the fluid when the brake pedal was released.

Admittedly, the Healy problem was not a replication of my current problem, but I had to start somewhere. So I replaced the hose, bled the lines and cranked the Continental up for a test run. No change --- a slight pull to the right on soft braking and lock up when braked hard.

So back to the barn and to step two—remove the hub! Now this is not a job a Ford, Zephyr or Lincoln owner would care to do every day. But out came the wheel puller and off came both rear hubs. Careful inspection of both revealed a well defined scoring or scraping around the inner wall of the right hub. It looked as though the edge of the brake shoes might have been forced against it. Removing the right side brake shoes, I found similar heavy scuffing on the outboard edge of both shoes! Now we were on to something!!! But what was forcing those shoes against the hub? The shoes were not bent but I noticed the lining wear was not even. The outer half of both linings showed modest wear but the inner half [toward the hub rim] showed virtually no wear. AHA! Something was driving the shoes against the wall of the hub with enough force to lock the wheel. But what?

It had to be the brake drum and the only thing that would do that would be a tapered drum, but I had no tools to take an accurate measurement, so I gathered up the two hubs and drove to the machine shop of my friend, Larry. I explained my problem to him and what I thought might be the cause. Larry quickly mounted the suspect drum on his lathe. He quickly confirmed my theory----- The brake drum WAS tapered. The diameter at the rim measured 1/8 inch greater than at the inner surface!! How could that happen? Larry explained that it was probably caused by a faulty lathe creeping against the pressure of the cutting tool. I am not a machinist so I cannot comment on his explanation, but I felt sure I had found my problem.

Larry resurfaced both drums after assuring me that they would be within tolerances after resurfacing. I rushed home, installed and adjusted the brakes to accommodate the larger drums. The test drive was a total success---- gentle braking with no pull to the right and panic stops? Straight ahead—hands off!! No more fear of those Mustang taillights.

The tapered drum had resulted in asymmetrical contact with the shoes and the high hydraulic pressure of panic braking forced both shoes outward and into a metal-to-metal contact with the wall of the hub, causing the wheel to lock.

Hereafter, you can bet I will test my cars in a controlled environment instead of a crowded parkway and to the extent possible check and double check all parts before installing them --- and know a good machinist.

TURN SIGNALS *Ray Kunsman*

Here is an unsolicited testimonial for a relatively new electronic turn signal system for our old cars.

First, is there really a need for turn signals? Retro fit turn signals have been around for years, but as long as you can signal with your left hand and arm, why bother? You should. Here's why. Assuming that a majority of new cars had turn signals, say in 1960. If you were 16 in 1960, your 58 now and really have never used hand signals.... for the last 42 years! More to the point, today, the average 16 year old first year driver probably thinks your giving him (or her) the "you know what" sign when your actually signaling a right hand turn. Worse, to a majority of today's driver the manual left hand, pointed index finger turn signal immediately translates to: "lookie over there" !

To the rescue comes a new turn signal system from Electro-Tech, Inc., 8836 Xylite St NE, Blaine, NM 55449. First, the bad news. They are not inexpensive. Intro price $169.95, (reg price $189.95), and an economy version with a toggle switch instead of the steering column lever, for $129.95., plus $8.95 S&H for any version. However, if you agree that you usually get what you pay for, that bromide clearly applies to this product.

To me, the big advantages of these turn signals are:

- No extra (usually ugly), exterior signal lights to install. This system works thru your existing front park and rear brake light filaments.
- Wiring is simple, use new wire from each corner. (The Company will supply wire for an extra $20. no fuss/no muss)
- The computerized controller is the heart of the system; attaches to the underside of the dash and also includes the interior directional lighted status indicators...blinkers,
- All roads lead to Rome, and all wires lead to this controller under the dash.
- Has a 4-way flasher mode
- All signal flashing is accompanied with that distinctive "European" audio ...."e au, e au, e au"
- -The turn switch housing is well made, the one I bought is machined aluminum, it's small and has that retro look. They also come in natural, black anodized or bead blasted.
- --The EFV8Club does not deduct judging point for installed turn signal systems.
- -and lastly..."Pease of Mind" / "Insurance"...My cars came with limited safety equipment: juice brakes, safety glass...and I'm thankful for that. Now that these new turn signals are installed my next project has to be...seat belts. Any leads out there?

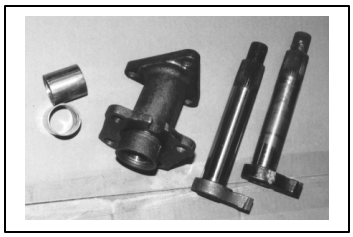
BUSHING BASICS – What I should have known before I started. – *Dave Gunnerson*

Many of you reading this know far more about this subject than I, but if my story helps just one person avoid the same mistakes, I'll be satisfied.

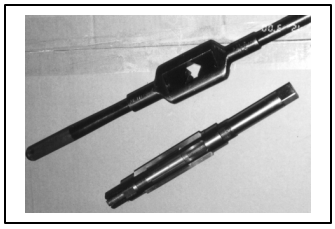
My introduction to bushings started innocently enough. I discovered that someone had welded the pitman arm to the sector shaft of my truck making removal of the steering box for cleaning more than a little challenging. After much filing, grinding and muttering words that are not fit to print, I was able to separate the pitman arm and remove the steering box. Obviously, after this treatment, the sector shaft was in poor shape and the pitman arm was a total loss. I was able to find a NOS sector shaft and a good

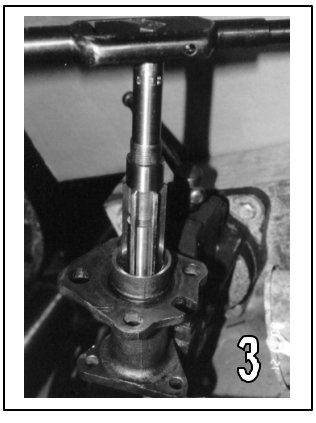
used pitman arm. Upon disassembly of the steering box, I found that the old sector shaft had some wear and the two bushings in the casing were also worn. New replacement bushings were procured. Photo 1 shows the bushings, sector shaft housing and the sector shafts.

Thanks to a press at work, I was able to push out the old bushings and press in the new ones. Now I thought I was all set. Wrong! The sector shaft didn't fit. Obviously the cheap replacement bushings were defective, or so I thought, and a set of NOS bushings was ordered. Now, back to the shop at work, out come the replacement bushings and in go the NOS bushings. Admiring my handiwork, I brought the newly refurbished unit home. Guess what surprise awaited me? The sector shaft didn't fit again! Now what?

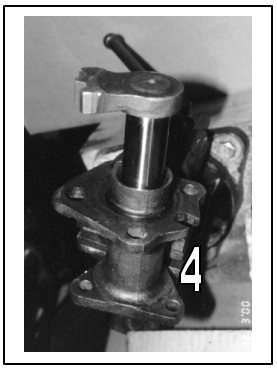


Back at work I asked an old hand at the machine shop what to do about my problem. He took one look at the parts and said, "You need a hand reamer". I said "A what"? He then lead me over to a large set of drawers and pulled out the tool shown in photo 2. It is a 12-inch long threaded shaft with six tapered slots cut along its length. Cutting blades slide in the slots and are held in place by two threaded rings. Moving the rings slides the blades along the tapered slots thus changing the cutting diameter of the blades. The machinist handed me a reamer sized 1-3/16" to 1-9/16" to enlarge the bore of the bushings to the proper 1-1/4" diameter of the truck's sector shaft. He also let me borrow the proper handle. The sector shaft casing was firmly mounted in a bench vise and the reamer adjusted to just fit inside the bushings (see photo 3).





The machinist suggested increasing the diameter with multiple cuts and going very slowly at the end to ensure a good fit. Sure enough, after making several passes, the bore was slowly increased, and the sector shaft slid in like silk (photo 4). I did the reaming all by hand and will admit that the diameter of the bushings at the outer ends is larger than the main bore diameter, but this is more a result of my lack of experience and the shaft fits really well, so I'm happy.

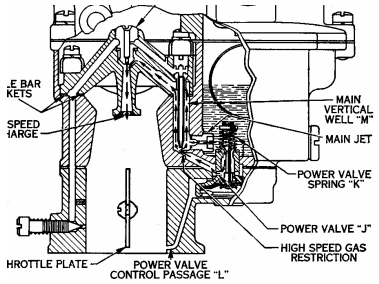


My lessons: (1) It takes a press, new bushings, the properly sized hand reamer and some patience to do the job right. (2) It's really not hard to do. (3) Having a Professional Machinist as a friend is a good thing.

MEET THE POWER VALVE ('39 - '48 Ford type, Chandler-Groves *Editor*

Symptoms: 1) After a few days you have to crank and crank to get fuel to the carburetor 2) Starting after the car has been running is difficult 3) The idle is rough and the idle mixture adjustment screws have little effect. 4) After a while the car does not want to idle at all and you have to use the throttle/gas pedal to keep it running.

Cure: Replace the power valve. This valve has a tiny diaphragm that is affected by today's gasoline and it will leak into the manifold below the throttle plate. It progresses from symptom 1-4. The severity of the leak causes the symptoms. In the latest *V8 TIMES* a member wrote that he installs a plug in place of it and uses main jets two sizes larger! Every rebuilt kit has a new power valve with it.



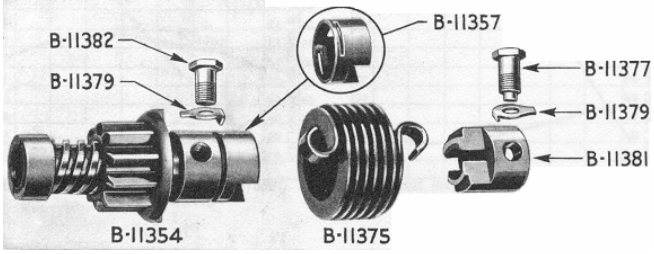
Here is a description of how the power works taken from the *Ford Service Bulletin*, Nov. 1938, subject 9510, page 47 under fuel system, Quote: The power valve "J" is operated by the vacuum below the throttle plate through passage "L" and the power valve spring "K". At idle, the vacuum is the highest and decreases as the load increases. The diaphragm (actuated by vacuum) holds the power valve on its seat until the vacuum drops to from 81/2 to 9 inches of mercury where it is not high enough to resist the action of the spring. This point at level road running at a constant speed is approximately 3800 RMP.

Under load as in climbing hills, etc., the vacuum drops as it becomes necessary to open the throttle wider in order to maintain speed. When the vacuum drops to from 8 ½ to 9 inches the power valve is opened by the spring the same as at 3800 RPM and the fuel then flows into the power valve and channels through the high speed gas restrictions into the center or main vertical well "M". This gives the additional fuel required for high speeds and for heavy loads at full throttle and low speeds. Unquote.

NO STARTER!

Editor

You think you have repaired/replaced everything on your old Ford for dependability – the "I can drive it to California" syndrome! Well, surprise. The latest "gotcha" happened when I was gassing up to meet the Lebkicker Tour at Fair Oaks. A push on the starter button produced a werrrr – broken bendix spring, I diagnosed. Just a slight forward motion and a clutch pop in second got me going again. The starter motor turns the engine over at 100 rpm's and a correctly tuned car will start instantly at the touch of the button (or something is wrong) or a coast.



Dropping the starter motor revealed that the Bendix spring was intact and that the starter drive head screw (11377) on the end of the shaft that holds the spring, had **sheared** off!! This is a special screw .75" long with a tapered end that fits a hole in the shaft to prevent part 11381 from moving. It was necessary to drill out the screw and retap the hole. Fortunately Mac's had the screw and special lock washer (11379).

I attempted to disassemble the Bendix by following the instructions in the Canadian shop manual "push drive assembly towards starter to expose the woodruff key in the outer end of armature shaft, remove key, pull drive assembly off shaft". Good luck – I would like to talk to someone who has done this!

Approximately 400 amps is flowing from the battery upon starting a V8. That represents heat at the cable and starter, so no longer than 15 seconds

The heavy Bendix spring takes up the shock when the pinion gear engages the flywheel. It becomes brittle over time and breaks, usually at the bolt connection. Tom Shaw remarked that this happens frequently with the Model A's. I shall now carry one of these in my parts box.

Some starter stats from an article in 'Big Valley V8" by Don Cunningham: Then engine turns over at a ratio of 10 starter teeth to 112 flywheel ring gear teeth. The starter turns over 11 times causing the engine to turn over once at obtaining 100 rpm.

A PROCEDURE THAT FORD FORGOT

Editor

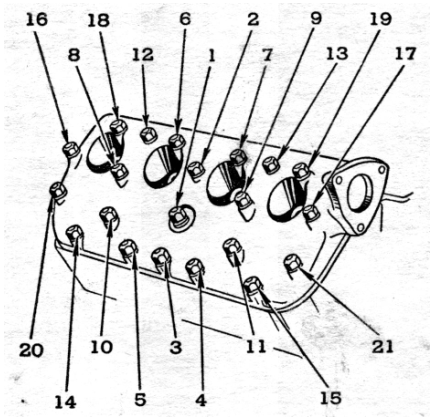
There is no Ford literature that provides information on the tightening sequence of head bolts! The torque value is given in Form 3666-47G, *Repair Manual Ford, Mercury & Truck V8 Engines, 1937 to 1947* (the little green book). Page 54, paragraph M, instructs on installing cylinder heads – basically, place a gasket on a clean surface and "Install and tighten the cylinder head nuts to 50 to 60 foot-pounds". No mention of pattern!

In the Service Bulletins, April 15, 1938, subject 6050-E: "Tighten Head Nuts", it gives torque values _ "All aluminum heads – 40 ft. pound, 60 HP – 30 Ft. pounds and cast – 50, but again no sequence.

Now, the *Service Requirements 1941 Ford V8*, form 7442, is a book of illustrations of the filmstrips shown to new replacement mechanic. Most of the experienced men were going to war. These service department personnel were new, so one would think that if the sequence of head bolt tightening was important, it would be shown here. Under: Adjust cylinder head nuts – "Now shut of the engine and adjust the cylinder head nuts with a torque indication wrench." the record accompanying the film would intone.

The *Motor's Auto Repair Manual* specifically states: As no particular tightening sequence is recommended by the manufacturer, the nuts should be tighten form the center outward" and goes on to say "to prevent gasket failure, cylinder distortion, excessive oil consumption, loss of compression and poor performance, cylinder head nuts should be tightened gradually and evenly." None of these awful results seemed important to Henry, because no where is it mentioned in any of Ford's literature.

The only guide that I have found is from the *Mechanics Repair Manual for Ford V8's* produced by *NAPA*. This neat illustrated book was published in 1936 and 1940 and for later years also. An illustration shows the sequence numbers of the head nuts to tighten.. NAPA also gives the reasons why we should do this, similar to what Motor's remunerates , and adds "If the same order of tightening is followed each time the nuts are tightened, danger of wrinkling the gasket or distorting the head will be avoided". Again, Henry was apparently not worried about this.



So, Ford did not deem it to be important to inform his mechanics of any pattern or procedure for fastening down the flat head while Motors's and NAPA did – strange.

MAGIC ELIXIR

By Jim McDaniel

You Club members may remember that about two years ago I blew a hole in a piston in my old 1951 Sheriff's cruiser. I believe it started with a broken ring. That resulted in me having a "new" 8BA rebuilt down in North Carolina. I drove down, picked up the new engine, and trailered it back to Northern Virginia in a U-Haul, where I installed it in the car in my front driveway.

And I'm sure you haven't forgotten my "excellent" learning experience (that I questionably shared with you all) where I installed the thermostats backwards (did he say backwards?) and absolutely cooked the new rebuilt engine, cracking the block between one of the pistons and a valve. I still say I really DO know how the thermostats go in, but I just had a brain f*art. Murphy at his best. At least that's my story and I'm sticking to it!

I then took the cooked engine BACK down to North Carolina to the same guy, who had guaranteed his engine against "anything" (at least that's what he said when I bought it). Sure enough, even though I admittedly caused the failure because of excessive operator headspace, he readily and cheerfully – well, maybe not cheerfully – agreed to fix it. He offered to repair the small crack for no charge, or to rebuild me another engine for parts cost only (no labor charge). Not a bad deal. After considerable thought, perhaps based on faulty logic but influenced by a thinning wallet, I chose to have him just fix it.

Time passes… now I got it back home again and installed it in the car. This was last fall, and it ran GREAT! It was toward the end of the driving season, and after several successful outings where the old girl performed perfectly, I happily put her away for the winter when the weather turned cold.

Around February, during one of my occasional "startings" of the car during the winter to keep the oil stirred up and the seals moist, I checked the oil and discovered to my HORROR that the oil had the appearance of something like a coffee milkshake – oh so milky!

Disgusted, I just left it alone until the weather warmed while I tried to figure out the best course of action.

In a phone call to my Uncle Charlie down in Florida (my last remaining male relative from my dad's generation), I mentioned my engine problems to him. Now Uncle Charlie is about 85 years old and has been an automobile mechanic his entire adult life. He grew up in rural, or more accurately "frontier" central and southwest Florida in the 1920s, and has been fixing and maintaining Ford V8 flatheads (and just about everything else) since the very first V8 flatheads. Uncle Charlie, a perpetually cheerful fire-plug-of-a-man who loves to tell jokes and is never without a story, was instrumental in getting me my very first car. It was a black 1951 Ford Victoria that I got in the late 50s, and my brothers and I were always having Uncle Charlie help us keep our cars running. My oldest brother had a '41 Ford coupe and my other brother had a '54 Ford Tudor Crestliner.

After listening to my long, sad story during this phone call, Uncle Charlie, in his slow southern Florida drawl that he permanently acquired long before the great influx of Yankees to that part of the state, said to me, "Now boy, don't you give up on that motor yet. I used to use something on those old Fords when nothing else worked, and sometimes it'd just fix 'em right up."

He asked if I'd ever heard of "Liquid Glass." He said he'd just pour that in the radiator when an engine was leaking and his customer didn't want him to spend money on the car. Charlie said it'd fix just about any minor leak, either in the block or in a head gasket, and often an engine would go for several years after a drink of this without additional problems. He suggested that if I was going to trash the engine, I might just as well give it a try. He said he used to get his Liquid Glass in pharmacies (of all places).

It sounded like it was worth a shot. I tried several pharmacies. No luck. I called several auto parts stores. No luck there either. No one had ever heard of Liquid Glass. In talking with one of the old timers at a local auto parts store, he said he remembered liquid Glass, but hadn't seen it in years. He said they had new stuff out now that was an improvement over Liquid Glass (better living through chemistry), and he'd also heard very good things about this too. He said the reports were that it would absolutely seal minor water leaks in engines. He also said it was quite expensive, but he could get some for me. If it worked, I figured it was certainly cheaper than repairing or replacing the engine.

This new chemical sealant was called "BlueDevil," and the label on the plastic bottle touted that BlueDevil was an Engine & Cooling Sealant that was "#1 in the country! It PERMANENTLY seals blown head gaskets, leaking radiators, warped & cracked heads, leaking heater cores, engine block leaks, and leaking freeze plugs. (See label below.) Quite a claim! If it did all this, and if it would fix my problem, it must truly be a magic elixir!

But get this, it listed for about $95 per quart! Wow! The old fellow agreed to sell it to me for his jobber's price of $77.

Hmmmm… Again going through a thought process that was perhaps based on faulty logic, but was still being influenced by a thinning wallet, I rationalized that it was worth a hundred bucks if it did in fact work. I gulped and bought a quart of the elixir.

After meticulously following the directions on the bottle that called for draining the old oil, removing the thermostats, flushing the engine, and other things, I refilled the radiator with water, slowly poured in the full quart, put on the pressure cap, and let the engine idle for 30 minutes. And yes I closely monitored the engine for overheating (which it did not do).

After 30 minutes "run-in" time, it said to drive the engine normally for a few days, then replace the thermostats and continue to drive normally.

Guess what gang? It WORKED! I put BlueDevil in the car about two months ago and have had the car out at least half-a-dozen time. There is not a TRACE of water finding its way into the oil pan. Matter of fact, I put it in just before our V8 Club show in Fairfax City, and didn't want to advertise too widely what I'd done in case it didn't work. But it does work. It is still holding, and the car is running well.

2007 Update: I wrote this back in 2000, and that engine performed great till just this past summer (over six years), when it gave up the ghost for other reasons not related to the BlueDevil. The block cracked in another place, but the original crack that BlueDevil had held together for six years was still holding. This product really worked for me. Jim

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